4-21-00 Re/A

REISSUE PATENT APPLICATION TRANSMITTAL

ADDRESS TO:	Attorney Docket No.: 9209-4
ASSISTANT COMMISSIONER FOR PATENTS BOX PATENT APPLICATION WASHINGTON, DC 20231	First Named Inventor: Dominique Briere
	Original Patent No.: 5,968,560
	Original Patent Issue Date: October, 19, 1999 (Month/Day/Year)
	Express Mail Label No.: EM516323753US

APPLICATION FOR REISSUE OF: ☒ Utility Patent ☐ Design Patent ☐ Plant Patent
(Check applicable box)

1. ☒ Fee Transmittal Form (PTO/SB/56) *(Submit an original and a duplicate for fee processing)*
2. ☒ Specification and Claims *(amended, if appropriate)*
3. ☒ Drawing(s) *(proposed amendments, if appropriate)*
4. ☒ Reissue Oath/Declaration *(original or copy) (37 CFR 1.175)* **By ASSIGNEE: Declaration by Inventors to follow (MPEP 1410.01)**
5. Original U.S. Patent
   ☐ Offer to Surrender Original Patent *(37 CFR 1.178)* **to follow (MPEP 1416)**
   or ☐ Ribboned Original Patent Grant
   ☐ Affidavit/declaration of Loss
6. Original U.S. Patent currently assigned? ☒ Yes ☐ No
   (If Yes, check applicable box(es)
   ☐ Written Consent of all Assignees **to follow (MPEP 1410.01)**
   ☐ 37 CFR 3.73(b) Statement ☒ Power of Attorney

Accompanying Application Parts

7. ☐ Foreign Priority Claim *(37 USC 119) (if applicable)*
8. ☒ Information Disclosure Statement *(IDS)/PTO-1449* ☒ Copies of IDS Citations
9. ☐ English Translation of reissue Oath/Declaration *(if applicable)*
10. ☐ Small Entity Statement(s)
    ☐ Statement filed in prior application; status still proper and desired.
11. ☐ Preliminary Amendment
12. X Return Receipt Postcard *(MPEP 503) (Should be specifically itemized)*
13. ☐ Other

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Michael S. Connor

REISSUE APPLICATION FEE DETERMINATION RECORD PTO/SB/56

Docket Number 9209-4 (011496-195086)

Claims as Filed - Part 1

Claims in Patent	For		Number Filed in Application	(3) Number Extra	Small Entity		Other Than a Small Entity		
					Rate	Fee		Rate	Fee
(A) 14	Total Claims (37 CFR 1 16(j))		(B) 33	**** 13	x $ 9=	$		x $18 =	$ 234.00
(C) 1	Independent Claims (37 CFR 1 16(i))		(D) 5	* 4	x $ 39 =	$	OR	x $78 =	$ 312.00
					Basic Fee (37 CFR 1.16(h))	$ 345.00		OR	$ 690.00
					Total Filing Fee	$			$1236.00

Claims as Amended - Part 2

	(1) Claims Remaining After Amendment		(2) Highest Number Previously Paid For	(3) Extra Claims Present	Small Entity		Other Than a Small Entity		
					Rate	Fee		Rate	Fee
Total Claims (37 CFR 1.16(j))	***	Minus	**	* =	x $9=	$	OR	x $18=	$
Independent Claims (37 CFR 1.16(i))	***	Minus	*****	=	x $39	$		x $78=	$
					TOTAL ADDITIONAL FEE	$		OR	$

* If the entry in (D) is less than the entry in (C), Write "0" in column 3.
** If the "Highest Number of Total Claims Previously Paid For" is less than 20, Write "20" in this space.
*** After any cancellation of claims
**** If "A" is greater than 20, use (B-A); if "A" is 20 or less use (B-20).
***** Highest Number of Independent Claims Previously Paid For or Number of independent Claims in Patent (C).

☐ Please charge Deposit Account No. 16-0605 in the amount of $ __

☒ The Commissioner is hereby authorized to charge any additional fees under 37 CFR 1.16 or 1.17 which may be required, or credit any overpayment to Deposit Account No. 16-0605.

☒ A check in the amount of $ 1236.00 to cover the filing/additional fee is enclosed.

20 April 2000
Date

Signature of Applicant, Attorney or Agent of Record

Michael S. Connor
Typed or printed name

BLOW MOLDING DEVICE FOR PRODUCING THERMOPLASTIC CONTAINERS

The present invention relates to improvements made to devices making it possible to manufacture containers, in particular bottles, made of a thermoplastic by blow molding or stretch-blow molding of a preheated preform, the said device including at least one mold consisting of two half-molds respectively supported by two mold carriers which can move one with respect to the other.

It is common practice for the half-molds to be removably fixed to the respective mold carriers so that the said half-molds can be replaced or changed should they become damaged and/or worn and, above all, should containers of different shapes and/or sizes be manufactured, without it being necessary to replace the entire molding device.

However, such an arrangement is still far from being to the complete satisfaction of users. This is because each half-mold is heavy (for example about 25 to 30 kg for a steel mold): the fixing means must be able to support this weight and comprise many nut-and-bolt and/or screw connections; furthermore, each half-mold must be handled by several people and/or by means of a hoist, thereby requiring a suitable installation above the manufacturing device. Each half-mold is equipped with means for the circulation of one or more fluids for the cooling and/or heating of the walls of the impression: replacing each half-mold is accompanied by disconnecting, followed by reconnecting, of the corresponding fluid connections, all operations requiring time.

It is also necessary to add an economic consideration regarding the actual construction of each half-mold. The impression serving for pressure molding the final container must have a perfectly polished surface finish, to which, furthermore, the hot thermoplastic must not adhere: it is therefore necessary for the impression to be made of a suitable metallic material (for example stainless steel) which, moreover, may differ depending on the thermoplastic employed. Given the monobloc structure of the half-mold, it is therefore the totality of each half-mold which must be made of this suitable metallic material, this being a special and therefore expensive material, while the rear part of the half-molds merely fulfills a mechanical strength function, giving the mold rigidity and non-deformability, for which rear part a more ordinary, and therefore less expensive, material could be perfectly suitable.

The object of the invention is therefore essentially to remedy, as far as is possible, the drawbacks of the currently known manufacturing devices and to provide an improved device which allows quick and simple changing of the molding impressions in order to make it easier to adapt the device to the manufacture of various containers, and the improved structure of which device is, at the end of the day, less expensive than that of the current devices while still maintaining the same strength and non-deformability properties.

To these ends, a device for manufacturing thermoplastic containers, as mentioned in the preamble, is essentially characterized, being designed in accordance with the invention, in that each half-mold comprises a shell holder supported by the respective mold carrier and a shell which is provided with a half-impression of the container to be obtained and which can be removably fastened to its shell holder by quick-fixing means, the shell and the shell holder being of complementary shapes in order to be in at least partial mutual contact, with thermal conduction, while the pipes and connections for the circulation of cooling and/or

heating fluids, and optionally the members for guiding the half-molds in order to close the mold, as well as the pressure-compensating means for maintaining the sealed closure of the mold during blow molding, are provided exclusively in the shell holder.

By virtue of this arrangement, the part of the half-mold corresponding to the impression, which may be economically made of a suitable and relatively expensive material, and the rear part of the half-mold, which provides rigidity and mechanical strength and which may be made of a more ordinary and less expensive material (for example a standard aluminum alloy), are separated from each other. In addition, being less heavy, this rear part has less inertia, thereby contributing to facilitating the rotational movements of the half-molds. In addition, and above all, changing the impression in order to manufacture containers of various shapes merely requires changing the shell, which is of a much lower weight (for example about 10 kg) compared to the complete half-mold and which can therefore be handled manually: the handling installation (which, however, remains necessary in order to handle other components, and in particular the shell holders, of the device) may, however, be simplified and, above all, the procedure for replacing the shells is speeded up. This procedure is, furthermore, made even more rapid as there are no longer the fluid fittings to be disconnected, and then reconnected, these remaining permanently connected to the shell holders.

It is also possible to standardize the shell holders which are, from the outset, equipped with a number of fluid pipes from among which those useful for a given manufacture with a given impression may be selected. Thus, it is possible to create independent circuits making it possible to produce, in each shell holder and therefore in the shell, regions with differentiated temperature settings. Here again, this results in the possibility of reducing the manufacturing cost of the shell holders, which accompanies their standardized production in larger number.

Preferably, the mutually contacting mating faces of the shell and of the shell holder are approximately semicylindrical surfaces of revolution with an axis approximately parallel to the axis of the impression of the container to be manufactured; it is thus easier to produce mutually-contacting mating faces which ensure heat transfer as close as possible to that of a monobloc structure, something which may furthermore be obtained by providing for the shell and the shell holder to be in total thermal-conduction contact. However, it should be noted here that the arrangement according to the invention also provides the possibility of ensuring, when this proves to be desirable, that the shell and the shell holder are in partial thermal-conduction contact by leaving regions of limited thermal conduction, which also constitutes another means of creating, in the wall of the impression, regions with differentiated temperature settings.

It is desirable, in order to allow quick, and therefore easy, assembly of the shell on the shell holder, while still having precise relative positioning of the shells one with respect to the other, for the mutually-contacting mating faces, with thermal conduction, of the shell and of the shell holder to be provided with axial mutual-positioning means; preferably, the said axial mutual-positioning means comprise a system of one or more mating ribs and grooves extending circumferentially, which arrangement, in combination with the aforementioned semicylindrical configuration of the said mating faces of the Shell and of the shell holder, allows very simple assembly, with very precise positioning of the shell, using simplified fixing means.

Thus, advantageously, the means for quickly fixing the shell to the shell holder are provided on their respective

parting faces. In the case of semicylindrical mating faces, the said fixing means are located on the respective edges of the shell and of the half-shell, these being parallel to the axis of the impression; it is then desirable for the quick-fixing means to comprise, on one side, at least one stop for positioning the parting face of the shell with respect to the parting face of the shell holder and, on the other side, quick-screwing means on the parting face of the shell holder with a clamping surface projecting from the parting face of the shell, by virtue of which the shell is put into place on and locked onto the shell holder by curvilinear sliding of the shell, guided by the rib(s)/groove(s) system, in the cradle formed by the shell holder. In particular, if the mold carriers are rotationally pivoted with respect to each other, in order to form a "jackknife"-type mold, provision is made, in order to simplify connection and disconnection, for the above-mentioned stop to be located on the pivot side of the mold carriers and the quick-screwing means to be located on the opposite side.

In order to be more specific, it may be pointed out that, in a typical molding device designed in accordance with the invention, the time to replace a pair of shells is about 8 minutes while the time to replace a pair of half-shells in a prior device is about 20 minutes, using appropriate handling equipment.

The invention will be more clearly understood on reading the detailed description which follows of a preferred embodiment given solely by way of illustrative example. In this description, reference is made to the appended drawings in which:

FIG. **1** is a diagrammatic view from above of part of a molding device designed in accordance with the invention;

FIG. **2** is a front view of a two-piece half-mold of the device in FIG. **1**; and

FIG. **3** is a view from below of a half-mold in FIG. **2**.

FIG. **4** is a view from left, partially cutaway, of the device of FIG. **1**.

Referring first of all to FIG. **1**, this shows part of a device for manufacturing containers, in particular bottles, made of a thermoplastic such as polyethylene terephthalate PET, polyethylene apthhalate PEN or another material, as well as alloys or blends thereof, by blow molding or stretch-blow molding a preheated preform.

This device includes at least one mold **1** consisting of two half-molds **2** respectively supported by two mold carriers **3** which can move one with respect to the other. In the example shown, the two mold carriers **3** are made in the form of two enveloping structures pivotally mounted on a common rotation axis **4** in such a way that the two half-molds can move apart by pivoting (a socalled "jackknife" structure). The mold carriers may be driven, in order to open and close the mold, in a conventional manner using a system of traction arms pivoted at **5** to the respective mold carriers a certain distance from the axis **4** of the latter.

Locking means, denoted in their entirety by **6**, lock the two half-molds in the closed, molding position.

In accordance with the invention, each half-mold is made in the form of two subassemblies, namely a shell **7** provided with a half-impression **8** of the container to be manufactured and a shell holder **9** which supports the shell **7** and which is itself fastened to the corresponding mold carrier **2**.

Each shell holder **9** may be considered as corresponding externally, in shape and size, to the mold carrier of the previous structures and it may therefore be fastened to the respective mold carrier **3** in the same manner, for example by a nut-and-bolt connection **10**, it being possible for the number and disposition of the holes and internal threads to be identical to those of the previous arrangements.

As may be seen in FIG. **3**, each shell holder is provided with internal pipes **11** and with fittings **12** which are necessary for the circulation of at least one fluid for cooling or heating the wall of the impression. Any number of these pipes and fittings may be provided and they may, for example, be independent of each other so as subsequently to allow them complete freedom, by externally connecting them appropriately, to constitute circuits of various and/or independent configurations depending on the type of containers to be produced and the type of material employed. Thus, it is possible to standardize to some extent the manufacture of the shell holders **9** and to reduce the manufacturing cost thereof.

Because of the fact that the impression **8** is physically separated from the shell holder **9**, it is possible to make the latter from a less special material, for example an ordinary aluminum alloy, even when the shell is made of steel, thereby making it possible, here too, to reduce its cost; in addition, the shell holder **9** thus produced is lighter than a steel shell holder, which desirably decreases its inertia and has a favorable effect on the dynamic operation of the mold.

Each shell **7** has a half-impression **8** of the final container, hollowed out in its parting face **13**. The external face **14** of each shell **7** has the general shape of a semicylinder of revolution, the axis of which is approximately parallel to the axis of the impression **8** of the container; in practice, the impression is coaxial with the semicylinder. The shell **7** rests in a cradle **15** of complementary shape cut out in the shell holder **9**. The shapes of the shell and shell holder are perfectly matched and they are thus in as close a contact as possible. Provision may thus be made for the mating faces **14** and **15** of the shell **7** and of the shell holder **9** to be in complete thermal-conduction contact so that heat transfer from one to the other is as good as possible and approaches as far as possible that of a monobloc half-mold.

However, it is also conceivable for the said mating faces **14** and **15** to be only partially in thermal-conduction contact, with provision of regions of limited thermal conduction; it is thus possible to produce differentiated temperature settings in the wall of the impression. In order for the impression **8** to have the required polished finish and for the hot thermoplastic not to adhere to its surface, the shells are made from a suitable material, for example stainless steel. In order for the shapes of the mating parts of the shell holder **9** and the shell **7** to remain perfectly matched, it is necessary to choose materials exhibiting thermal expansion coefficients which are substantially identical.

In the example shown in FIG. **2**, the container to be produced has a bottom of complex shape (petaloid bottom) and the requirements for demolding the container after it has been formed result in the provision of a separate mold bottom **25**, distinct from the half-molds **2**, which includes the impression of the bottom of the container. It will be noted here that FIG. **3** is a view from below of the half-mold in FIG. **2**, the mold bottom **25** not being shown.

The axial mutual positioning of the shell holder **9** and of the shell **7** is achieved by a rib(s)/groove(s) set of mating elements which fit together, one in the other. As shown in FIG. **2**, the shell **7** is provided with two grooves **17**, hollowed out circumferentially in its external face **14** axially separated from each other; likewise, the cradle-shaped face **15** of the shell holder **9** has two ribs **16** which fit together without any clearance in the two respective grooves **17**. Once the shell **7** has been placed in the shell holder **9**, it can no longer move axially with respect to the latter but can only slide rotationally about its axis on the cradle **15**.

In order fully to lock the shell onto the shell holder, quick-fixing means are provided in the parting face **13** of the

shell and in the parting face **18** of the shell holder. For this purpose, respective housings **19** and **20**, hollowed out in the facing edges of the afore-mentioned parting faces **13** and **18**, respectively, are provided. The bottoms of the housings **19** of the shell **7** constitute flat bearing surfaces on which may bear members for locking the shell holder **9**. These locking members may be formed in many ways known to those skilled in the art. In the example shown in FIG. **2**, these are projecting lugs **21** drilled with an elongate hole **22** and retained by a screw **23** fixed to the bottom of the corresponding housing **20** of the parting face **18** of the shell holder **9**; this arrangement has the advantage that the shell is released as soon as the lugs **21** are unlocked and pushed back toward the outside, without it being necessary to remove the screws **23** completely. Notwithstanding this, the shell could also be locked onto the shell holder by using wide-head screws overlapping the flats of the housings **19**, or else by using quick-face eccentric-head screws, etc.

It will be noted that in practice the two locking members **21** located on the side adjacent to the axis of rotation **4**, in the case of a jackknife mold, do not have to be actuated and may thus constitute simple stops (with the possibility of adjusting the position of these stops) under which the flats of the respective housings **19** are brought when the shell is inserted into the shell holder, by causing the shell to slide rotationally in the latter. Moreover, given the position of these two locking members **21** located in the bottom of the open mold, their access is difficult and their removal would unnecessarily lengthen the process of replacing the shell **7**.

As for the rest, each shell holder **9** is designed in the same way as a previous half-mold, which includes the elements necessary for correct operation of the molding device, and in particular the means **10** for fixing it to the corresponding mold carrier **3**, the guiding fingers **24** (and the respective housings in the other shell holder) for closing the mold, the rear face provided with a chamber **26** and with an O-ring seal **27** for compensation as shown in FIG. **4**. It is therefore possible, in a preexisting installation, to replace the conventional monobloc half-molds with two-element half-molds according to the invention.

Needless to say, and as results already from the foregoing, the invention is in no way limited to those of its methods of application and of its embodiments which have been more particularly envisaged; on the contrary, it embraces all variants thereof.

We claim:

1. Device for manufacturing containers, made of a thermoplastic by blow molding or stretch-blow molding of a preheated preform, the said device including at least one mold **(1)** consisting of two half-molds **(2)** respectively supported by two mold carriers **(3)** which are made in the form of enveloping structures and which can move one with respect to the other, characterized in that each half-mold **(2)** comprises a shell holder **(9)** supported by the respective mold carrier **(3)** and a shell **(7)** which is provided with a half-impression **(8)** of the container to be obtained and which can be removably fastened to its shell holder **(9)** by quick-fixing means **(19–23)**, the shell **(7)** and the shell holder **(9)** being in complementary shapes in order to be in at least partial mutual thermal-conduction contact while the

pipes and connections for the circulation of cooling and/or heating fluids (**11**, **12**) are provided exclusively in the shell holder.

2. Device according to claim **1**, characterized in that the mating faces (**14**, **15**) of the shell (**7**) and of the shell holder (**9**) are in total thermal-conduction contact.

3. Device according to claim **1**, characterized in that the mating faces (**14**, **15**) of the shell (**7**) and of the shell holder (**9**) are in partial thermal-conduction contact by leaving regions of limited thermal conduction.

4. Device according to claim **1**, characterized in that the mutually contacting mating faces (**14**, **15**) of the shell (**7**) and of the shell holder (**9**) are approximately semicylindrical surfaces of revolution with an axis approximately parallel to the axis of the impression (**8**) of the container to be manufactured.

5. Device according to claim **1**, characterized in that the mutually contacting mating faces (**14**, **15**) of the shell and of the shell holder are provided with axial mutual-positioning means (**16**, **17**).

6. Device according to claim **5**, characterized in that the axial mutual-positioning means comprise a system of one or more mating ribs (**16**) and grooves (**17**) extending circumferentially.

7. Device according to claim **1**, characterized in that the means (**19–23**) for quickly fixing the shell (**7**) to the shell holder (**9**) are provided on their respective parting faces (**13**, **18**).

8. Device according to Claim **4**, characterized in that the means (**19–23**) for quickly fixing the shell and the shell holder are located on their respective edges parallel to the axis of the impression.

9. Device according to claim **8**, characterized in that the quick-fixing means (**19–23**) comprise, on one side, at least one stop for positioning the parting face of the shell with respect to the parting face of the shell holder and, on the other side, quick-screwing means (**23**) on the parting face (**18**) of the shell holder (**9**) with a clamping surface (**21**) projecting from the parting face (**19**) of the shell.

10. Device according to claim **9**, in which the mold carriers are rotationally pivoted with respect to each other whereby at least one stop is located on the pivot (**4**) side of the mold carriers (**3**) and the quick-screwing means are located on the opposite side.

11. Device according to claim **1**, characterized in that the shell holder (**9**) is also provided with members (**24**) for guiding the half-molds in order to close the mold.

12. Device according to claim **1**, characterized in that at least one of the shell holders is equipped with pressure-compensating means suitable for maintaining the sealed closure of the mold during blow molding.

13. Device according to claim **1**, characterized in that the shell holders (**9**) are equipped with a number of fluid pipes, by virtue of which it is possible to create suitable circuits for a given manufacture with a given impression.

14. Device according to claim **1**, wherein said containers are bottles.

* * * * *

15. A mold assembly for use in manufacturing molded thermoplastic containers comprising:

two mold shells each containing a half-impression of a substantial portion of the container to be molded;

two mold shell holders each defining a cavity for receiving each said respective mold shell such that each said respective mold shell is in at least partial mutual thermal-conduction contact with its respective shell holder; and

at least one quick-fixing locking member by which said mold shells are removably secured to said mold shell holders.

16. The mold assembly of Claim 15, further comprising at least one axial positioning assembly by which said mold shells are fixed in an axial direction with respect to said mold shell holders.

17. The mold assembly of Claim 16, wherein said axial positioning assembly comprises at least one meshing coupling member disposed on at least one of said mold shells and mold shell holders, and at least one complementary meshing coupling member disposed on at least one of said mold shells and mold shell holders.

18. The mold assembly of Claim 15, wherein said mold shell holders further comprise a number of internal fluid pipes and connections for the circulation of cooling and/or heating fluids.

19. The mold assembly of Claim 15, wherein at least one of said mold shells and/or mold shell holders define at least one cavity at the interface between said mold shells and mold shell holders into which pressurized fluid suitable for maintaining the sealed closures of the mold assembly may be interposed during the molding process.

20. The mold assembly of Claim 17, wherein said meshing coupling members further comprise a system of one or more mating ribs and grooves in said mold shells and mold shell holders.

21. The mold assembly of Claim 15, wherein said quick-fixing locking member comprises, on one side, at least one stop for positioning the parting face of said mold shell with respect to said mold shell holder and, on the other side, at least one quick-acting screw on the parting face of said mold shell holder with at least one clamping surface projecting from the parting face of said mold shell.

22. A mold assembly for use in manufacturing molded thermoplastic containers comprising:

two mold shells each containing a half-impression of a substantial portion of the container to be molded;

two mold shell holders each defining a cavity for receiving each said respective mold shell such that each said respective mold shell is in at least partial mutual thermal-conduction contact with its respective shell holder; and

at least one axial positioning assembly by which said mold shells are fixed in an axial direction with respect to said mold shell holders.

23. The mold assembly of Claim 22, wherein said axial positioning assembly comprises at least one meshing male coupling member disposed on at least one of said mold shells and mold shell holders, and at least one complementary meshing female coupling member disposed on at least one of said mold shells and mold shell holders.

24. The mold assembly of Claim 22, wherein said mold shell holders further comprise a number of internal fluid pipes and connections for the circulation of cooling and/or heating fluids.

25. The mold assembly of Claim 22, wherein at least one of said mold shells and/or mold shell holders define at least one cavity at the interface between said mold shells and mold shell holders into which pressurized fluid suitable for maintaining the sealed closures of the mold assembly may be interposed during the molding process.

26. The mold assembly of Claim 23, wherein said meshing male and female coupling members further comprise a system of one or more mating ribs and grooves in said mold shells and mold shell holders.

27. A mold shell for use in manufacturing thermoplastic containers comprising:

a cavity defining a substantial portion of a container; and

at least one male or female coupling member by which the mold shell can be fixed in an axial direction by meshing with a complementary male or female coupling member in any device employed to support said mold shell during the molding process.

28. The mold shell of Claim 27, wherein said defining cavity further comprises a neck portion, a sidewall portion, and a base portion.

29. The mold shell of Claim 27, wherein said male or female coupling member further comprises either a groove or a rib disposed about the exterior surface of said mold shell.

30. The mold shell of Claim 29, wherein said groove or rib is proximate the neck portion of the mold shell.

31. The mold shell of Claim 27, further comprising at least one clamping surface projecting from the parting face of said mold shell.

32. A method of producing a thermoplastic container using a preheated preform and a two stage mold assembly comprising the steps of:

mounting mold shell holders onto supporting hardware disposed on a mold machine;

making connections to said mold shell holders for the purpose of directing cooling and/or heating fluid through internal pipes in the walls of said mold shell holders;

assembling mold shell halves each containing a half-impression of a substantial portion of the container to be molded into said mold shell holders, engaging meshing complementary male and female coupling members in said mold shells and mold shell holders;

engaging at least one quick-fixing locking mechanism to secure said mold shell halves into said mold shell holders;

positioning a preheated preform of thermoplastic material between the mold shell halves;

closing the mold assembly;

expanding the preheated preform into the mold cavity defined in significant part by the mold shell halves to form the thermoplastic container;

opening the mold assembly; and

extracting the thermoplastic container.

33. The method of claim 32, further comprising the steps of:

making an additional connection to the mold shell holders for the purpose of introducing pressurized fluid into at least one cavity at the interface of the mold shells and mold shell holders; and

introducing pressurized fluid into at least one cavity at the interface between said mold shells and mold shell holders during the molding step to maintain the sealed closure of the mold assembly.

FIG.3.

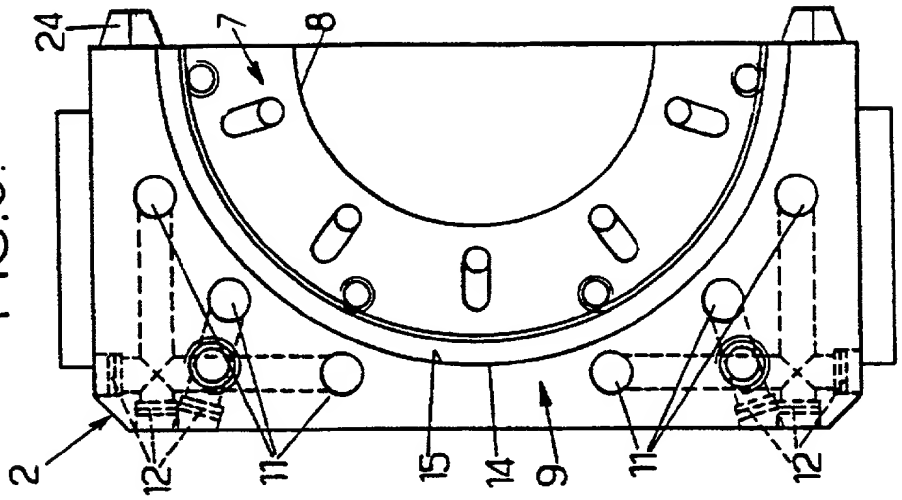
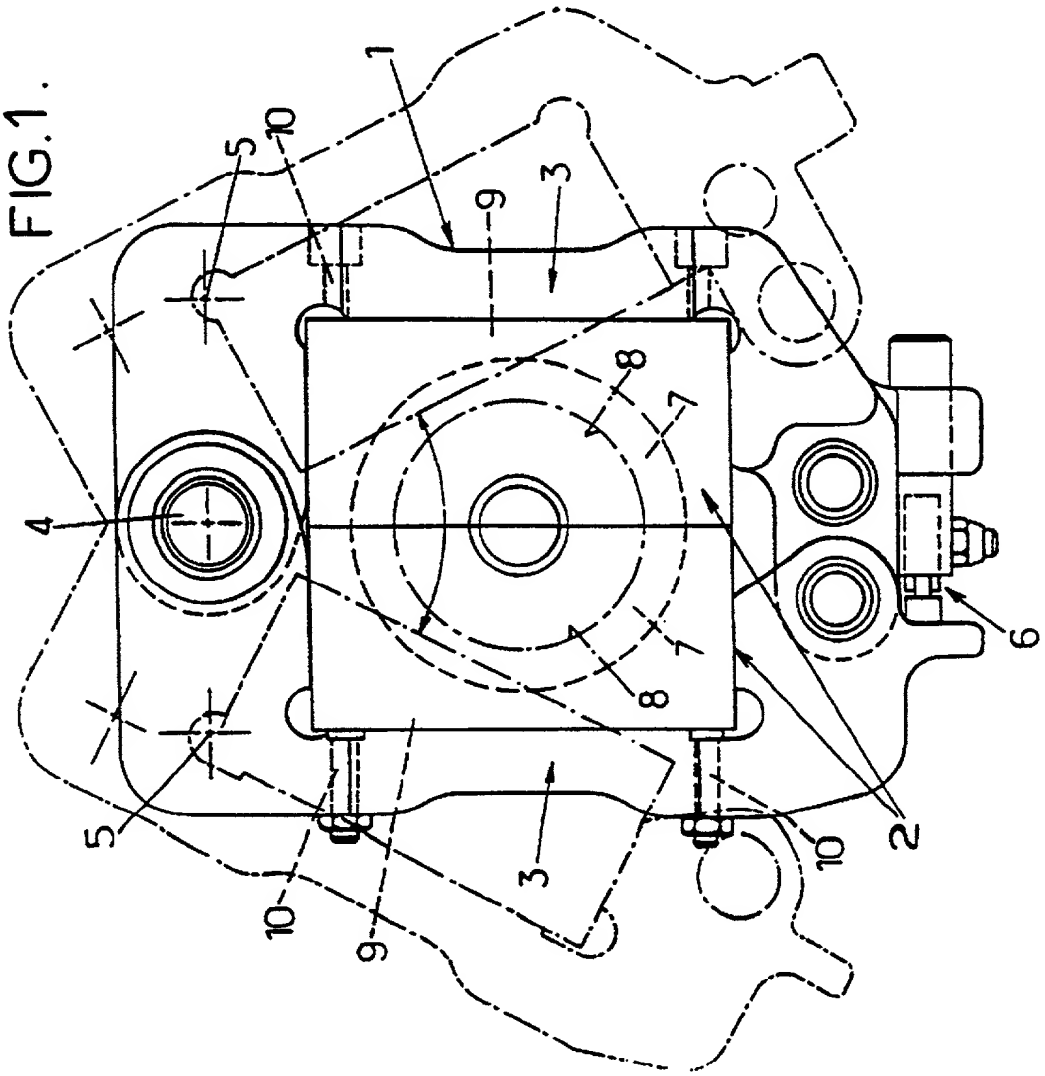


FIG.1.



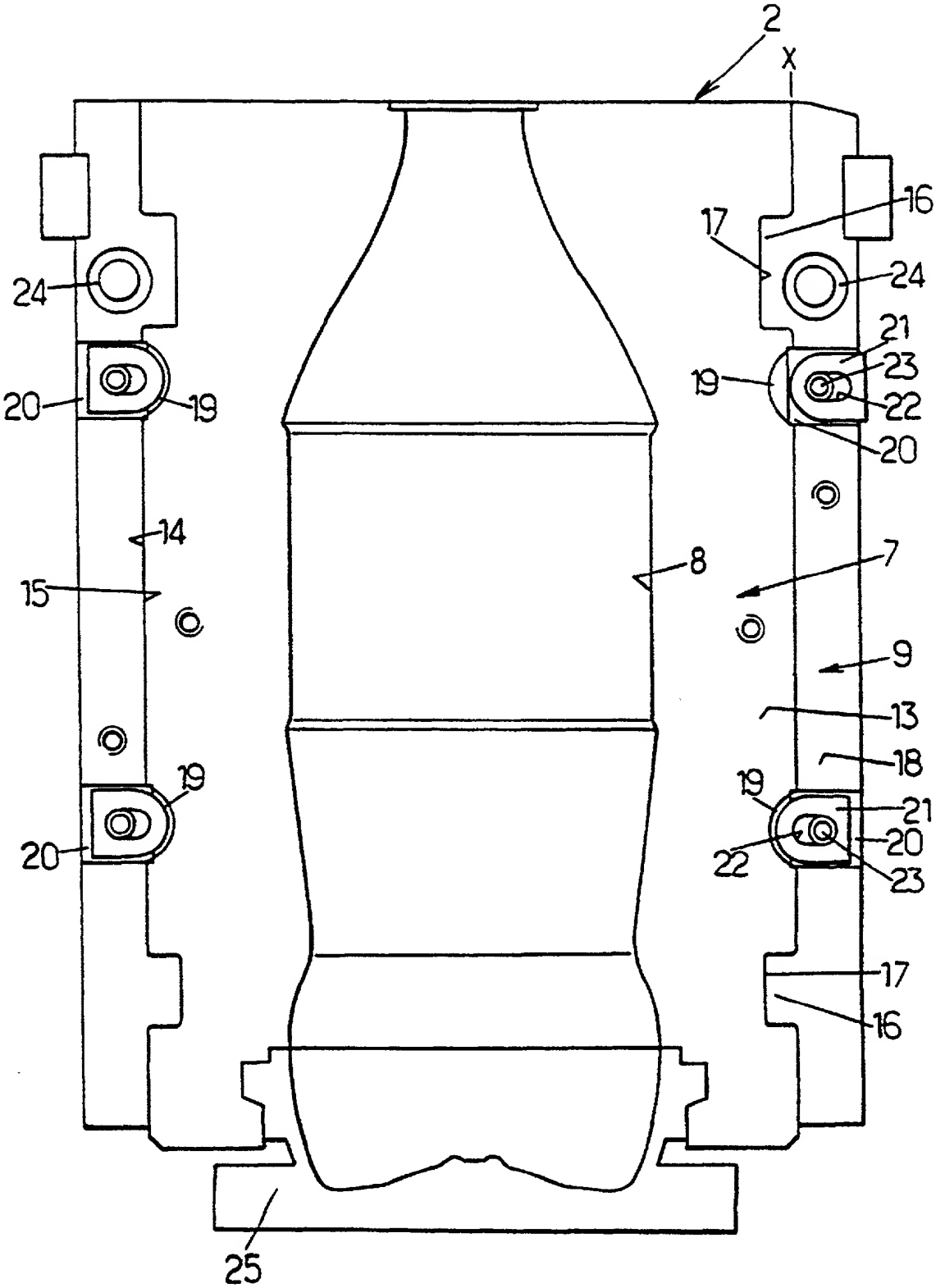

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FIG.2.

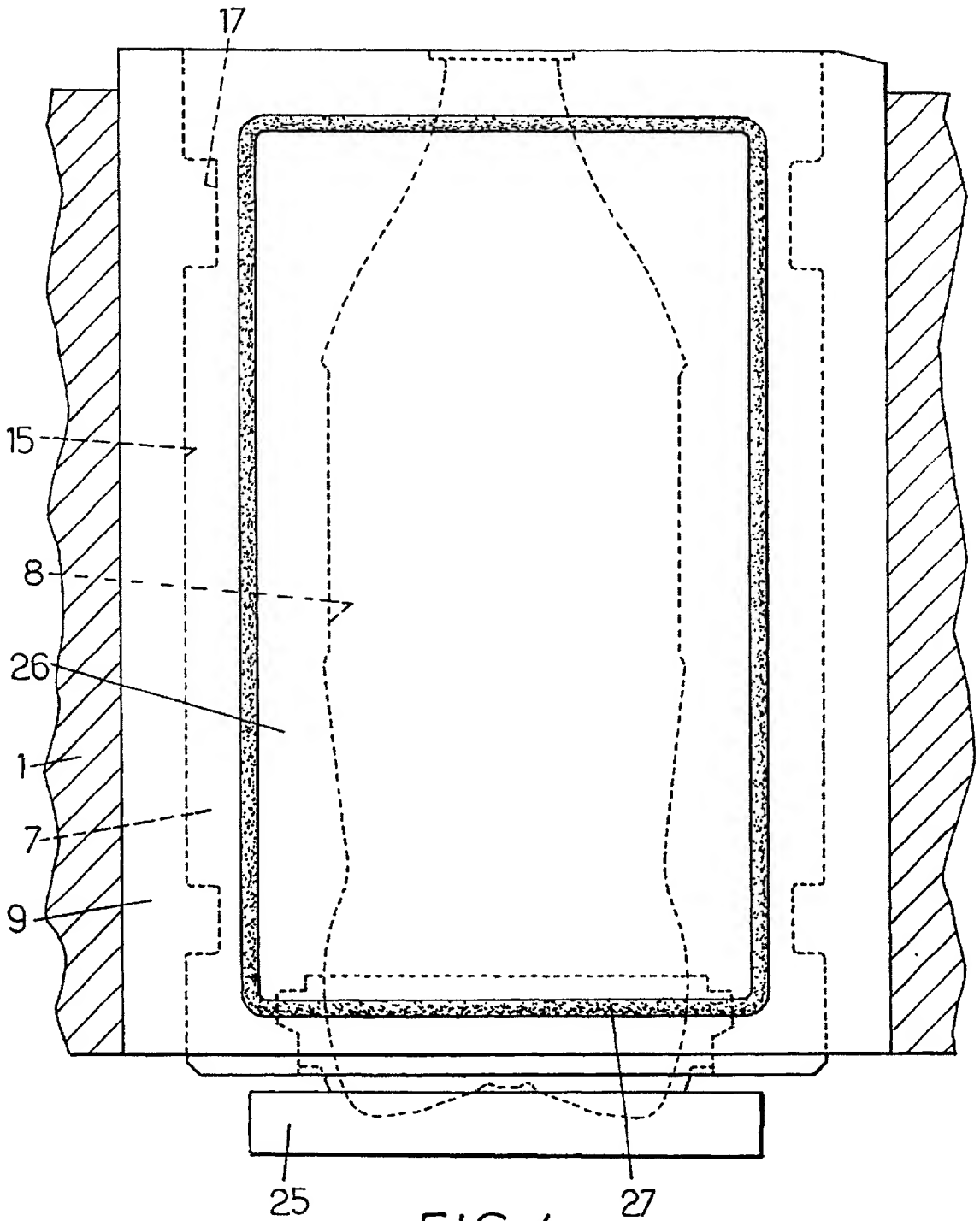

FIG. 4.

REISSUE APPLICATION DECLARATION BY THE ASSIGNEE

Docket Number 9209-4

I hereby declare that:
My residence, post office address and citizenship are stated below next to my name.
I am authorized to act on behalf of the following assignee: Sidel, Octeville sur Mer, France, and the title of my position with said assignee is: Vice-President.
The entire title to the patent identified below is vested in said assignee.

Name of Patentee(s): Dominique Briere, Le Havre ; Léon Coisy, Saint Martin du Manoir ; Paul La Barre, Sainte Adresse ; Pascal Santais, Le Havre, all of France
Patent Number: 5,968,560
Date Patent Issued : October 19, 1999
Title of Invention: **BLOW MOLDING DEVICE FOR PRODUCING THERMOPLASTIC CONTAINERS**

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate, or of any PCT International application having a filing date before that of the application on which priority is claimed.

95 04651	France	04/19/1995	☒ Yes ☐ No
Number	Country	MM/DD/YYYY Filed	Priority Claimed

I believe said patentee(s) to be the original, first joint inventor(s) of the subject matter which is described and claimed in said patent, for which a reissue patent is sought on the invention entitled

BLOW MOLDING DEVICE FOR PRODUCING THERMOPLASTIC CONTAINERS

the specification of which

☒ is attached hereto.

☐ was filed on as reissue application number
and was amended on
(If applicable)

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. § 1.56.

I verily believe the original patent to be wholly or partly inoperative or invalid, for the reasons described below. (Check all boxes that apply.)

☐ by reason of a defective specification or drawing.

☒ by reason of the patentee claiming more or less than he had the right to claim in the patent.

☐ by reason of other errors.

At least one error upon which reissue is based is described as follows: The original patent is believed to be defective because the original claims are believed to claim less than the patentee has a right to claim. No claim in the original patent is directed to the mold shells standing alone or to a method of producing containers, both of which are believed to constitute patentable subject matter. New Claims 27-33 are presented to overcome these defects. In addition, upon reviewing the original patent applicant became concerned that others might attempt to construe the original claims to include limitations directed to support structure of the molding machine in addition to the shells and shell holders. Accordingly, new Claims 15-26 are presented in the reissue application to resolve any doubt as to the subject matter that applicant is entitled to claim.

All errors corrected in this reissue application arose without any deceptive intention on the part of the applicant.

I hereby appoint the practitioners associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to that Customer Number.

Customer Number 000826

Please direct all communications about the application to the attention of:

Michael S. Connor
Registration No. 34,141
Telephone: (704) 331-6000
Fax: (704) 334-2014

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this declaration is directed.

Full Name of person signing (given name, family name) : Dominique MAUTALEN

Signature: _____ Date: MARCH 28 2000

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④ 251 Rue Felix Faure 76620 LE HAVRE France

CLT01/4403150v1

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re: Application For Reissue of
U.S. Patent No. 5,968,560

Inventors: Dominique Briere, Le Havre; Léon Coisy, Saint Martin du Manoir; Paul La Barre, Sainte Adresse; Pascal Santais, Le Havre

Title: BLOW MOLDING DEVICE FOR PRODUCING THERMOPLASTIC CONTAINERS

Filed: Concurrently Herewith

POWER OF ATTORNEY

The assignee hereby appoints Michael S. Connor, Registration No. 34,141, as its attorney, with full power of substitution and revocation, to prosecute the application, to make alterations and amendments therein, to transact all business in the Patent and Trademark Office in connection therewith and to receive the Letters Patent.

Please direct all communications as follows:

Michael S. Connor
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Fax: (704) 334-2014

SIDEL

By: Dominique MAUTALEN
Its: Vice-President

Signature _____

Date: MARCH 28, 2000